ABSTRACT OF THE DISCLOSURE

[0087] The present invention provides a methodology for certifying software for essential and security-critical systems. The system and method provide a methodology and corresponding analysis engines increase the level of confidence that common vulnerabilities are not present in a particular application. A pipeline system consisting of independent modules which involve increasingly complex analysis is disclosed. The pipeline approach allows the user to reduce computation time by focusing resources on only those code segments which were not eliminated previously in the pipeline. The first step of the pipeline consists of flagging all potential vulnerabilities contained in an extendible vulnerability knowledge database (VKdb). This stage then filters vulnerabilities based on context information and passes them to the second stage. The second stage performs complex static analysis on the vulnerabilities and passes the remaining ones to a dynamic analysis stage. The pipeline approach allows very effective use of computation time and is the basis for our software certification methodology.